

Discussion

In both cases simultaneous administration of other potentially hypocalcaemic treatment makes it more difficult to assess additional treatment with calcitonin. Nevertheless, in case 1 intravenous calcitonin appears to have had an immediate effect followed by 36 hours without a further fall in the calcium concentration until the addition of intramuscular calcitonin. In case 2 a previous episode of hypercalcaemia (serum calcium concentration of 3.85 mmol/l (15.4 mg/100 ml)) was treated with steroids and rehydration alone with a fall in the serum calcium concentration to 3.05 mmol/l (12.2 mg/100 ml) taking 19 days. No side effects attributable to calcitonin were observed.

Supernatants from tissue culture of bone marrow cells from patients with multiple myeloma have been found to secrete a calcium mobilising factor⁴ and parathyroid-hormone or prostaglandin-mediated osteolytic activity has not been shown. Calcitonin lowers the plasma calcium concentration principally by reducing osteoclastic resorption, although it does have a small calciuric effect.

Use of intravenous phosphate in hypercalcaemia is not always successful and may be complicated by soft tissue calcification. The use of intravenous sodium chloride or sulphate depends on good renal function. Mithramycin⁵ has been used successfully in small doses, although toxicity would theoretically be a problem if doses were repeated. Calcitonin offers a means of rapidly correcting hypercalcaemia associated with multiple myeloma, giving time for treatment of the primary condition to take effect.

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Energy intake and physical activity in obese children

It is commonly believed that obese children overeat. Nevertheless, energy intake in these children is not excessive^{1 2} and decreased physical activity is a more constant characteristic.^{3 4} Few studies have measured both energy intake and exercise in the same obese individuals.^{3 4} Therefore, as part of a community study of obese children we re-examined this relationship.

Diet and exercise study of ten obese boys, ten obese girls, and their controls

Category	Diet		Exercise	
	Mean (and range) total weekend food intake (MJ)	Significance	Mean (and range) total exercise (units)	Significance
Obese boys	31.4 (20.3-46.9)	} $t = 0.18$; NS	7.2 (3.6-12.6)	} $t = 1.2$; NS
Control boys	30.8 (17.0-39.8)		9.0 (4.1-17.6)	
Obese girls	27.0 (21.3-35.0)	} $t = 1.4$; NS	8.7 (4.2-16.2)	} $t = 0.2$; NS
Control girls	31.3 (22.1-46.6)		8.4 (5.3-13.6)	

Conversion: SI to traditional units—Energy: 1 MJ \approx 239 kcal.

Methods and results

Selection of children—Ten obese boys and ten obese girls born in 1961 and a similar number of control children were studied at the age of 12 years. The weights for height of the obese children had been >97 th centile at the age of 10 years and were still >90 th centile at the age of 12.⁵ The control children had weights for height between the 25th and 75th centiles and were individually matched with the obese children for sex, age, and school.

Dietary study—Energy intake was measured over one weekend (Friday teatime to Monday breakfast inclusive). The mother of each child recorded every item of food eaten by the child during the study. To help her assess the weight or volume of the food eaten she was given a standard cup and spoon and diagrams of a slice of meat, a chop, and a piece of cheese of known weight. The children themselves kept a diary record of food eaten between meals. The entries were discussed with the family within a day or two of the study period. The weights and volumes of the foods recorded were converted to units of energy using Department of Health Food Tables.

Exercise study—This was done on the same children within three months of the dietary study with a pedometer (HB, Paris), firmly attached at the waist in a wide belt. The children wore the belt during the waking hours on a school day except when swimming (two in each group). They were told that they could wear it without harm for other games and were asked not to modify their behaviour because of the study. The pedometer was set at zero before it was put on the child, and the final reading taken 24 hours later. The setting on the pedometer was the same for each child and no attempt was made to change the units of activity to units of work.

The results showed that there was no significant difference between the energy intake or the measured activity of the obese and control children, although the obese boys tended to take less exercise than did their controls. The ranges of energy intake and exercise were wide but there was a tendency, not significant, for above average intake to be associated with above average activity. In all groups one-sixth of the energy intake was eaten between main meals.

Discussion

The findings of this study indicate that children who are already obese have usually reached a state of equilibrium in which food intake and pattern of exercise are little different from those of children of normal weight. Although treatment will involve reducing intake and increasing activity it seems that it is usually unjust to accuse obese children of overeating. Although the eating pattern during a weekend may differ from that during the week, the large proportion of energy taken between major meals indicates one easy way for children to reduce energy intake.

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*This study was carried out while these were undergraduate students in the University of Newcastle upon Tyne as part of a student project.